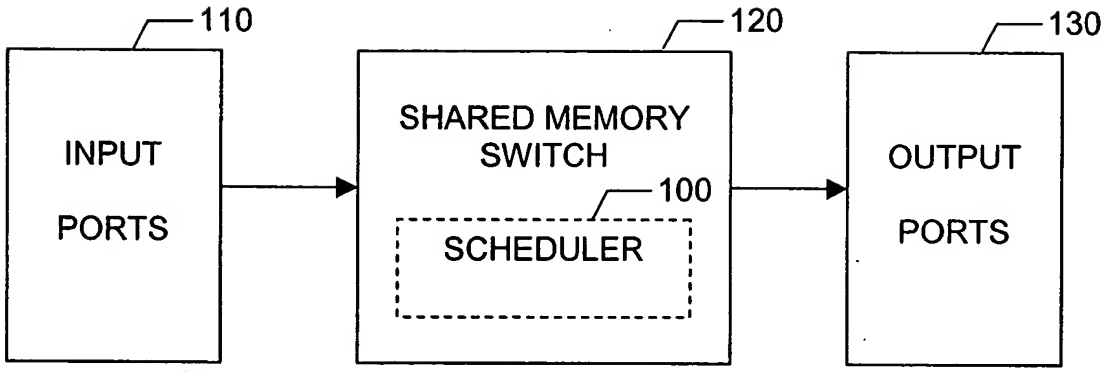
110
120
130
INPUT
PORTS
SHARED MEMORY
SWITCH
100
SCHEDULER
OUTPUT
PORTS

FIGURE 1

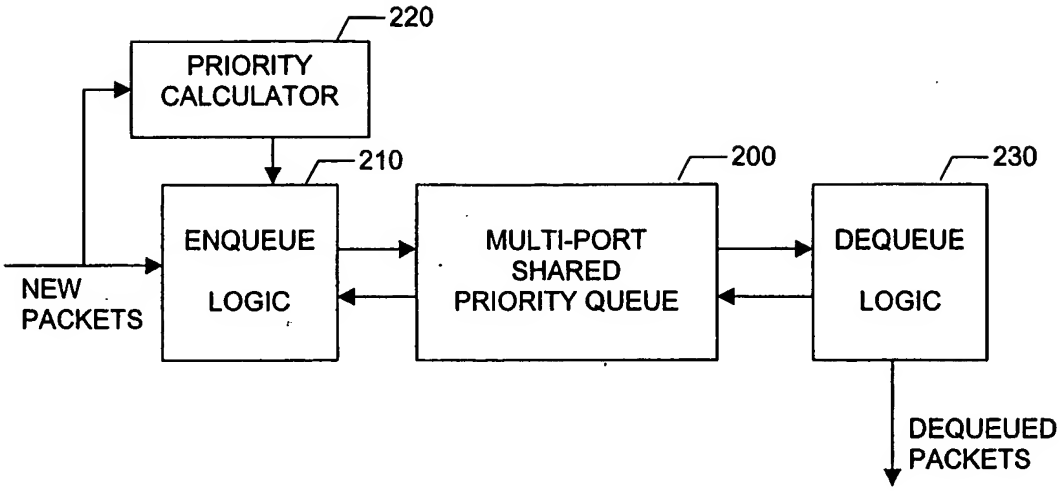

FIGURE 2A

VALID	PORT ID	FLOW ID	PRIORITY VALUE

FIGURE 2B

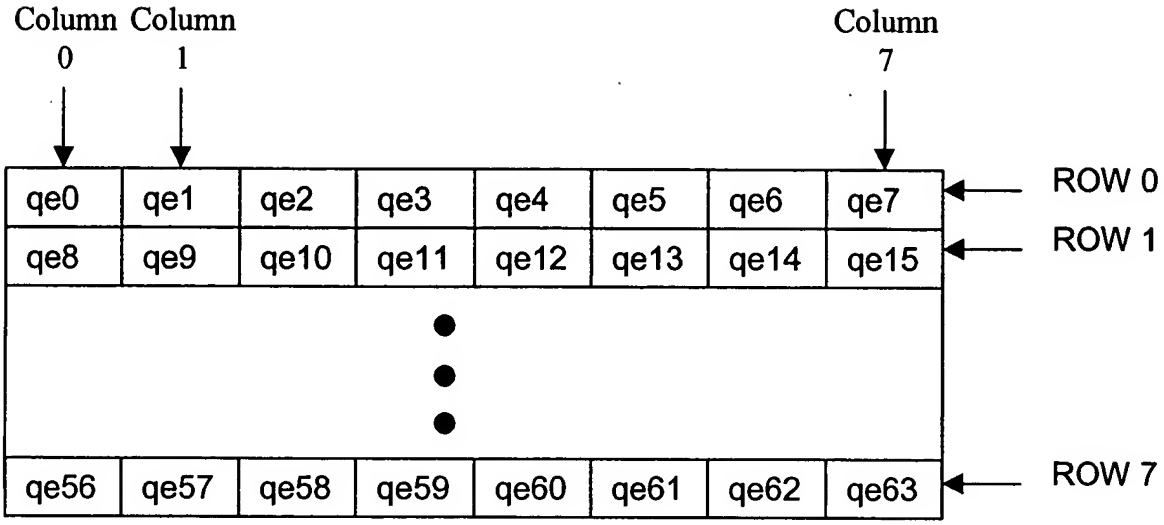
Column 0
Column 1
Column 7
qe0
qe1
qe2
qe3
qe4
qe5
qe6
qe7
qe8
qe9
qe10
qe11
qe12
qe13
qe14
qe15
qe56
qe57
qe58
qe59
qe60
qe61
qe62
qe63
ROW 0
ROW 1
ROW 7

FIGURE 2C

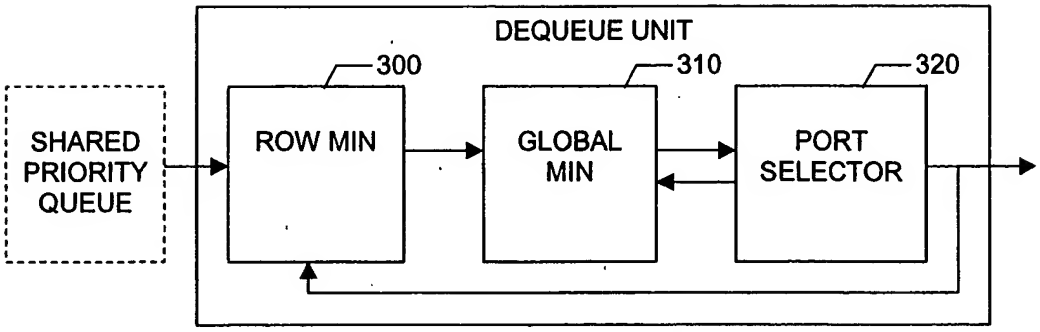

FIGURE 3A

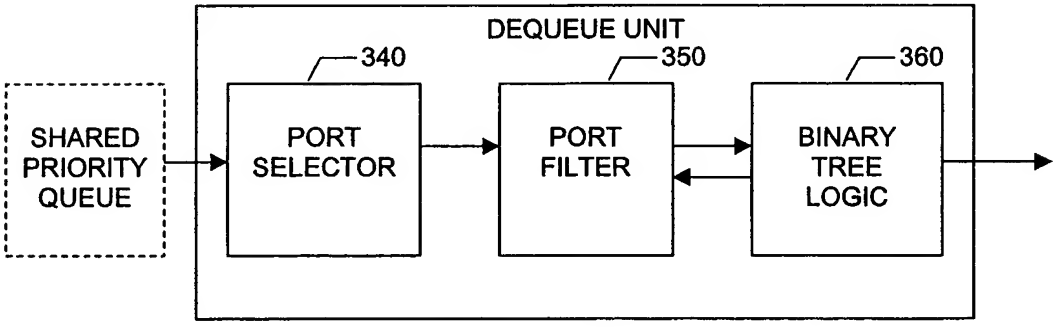

FIGURE 3B

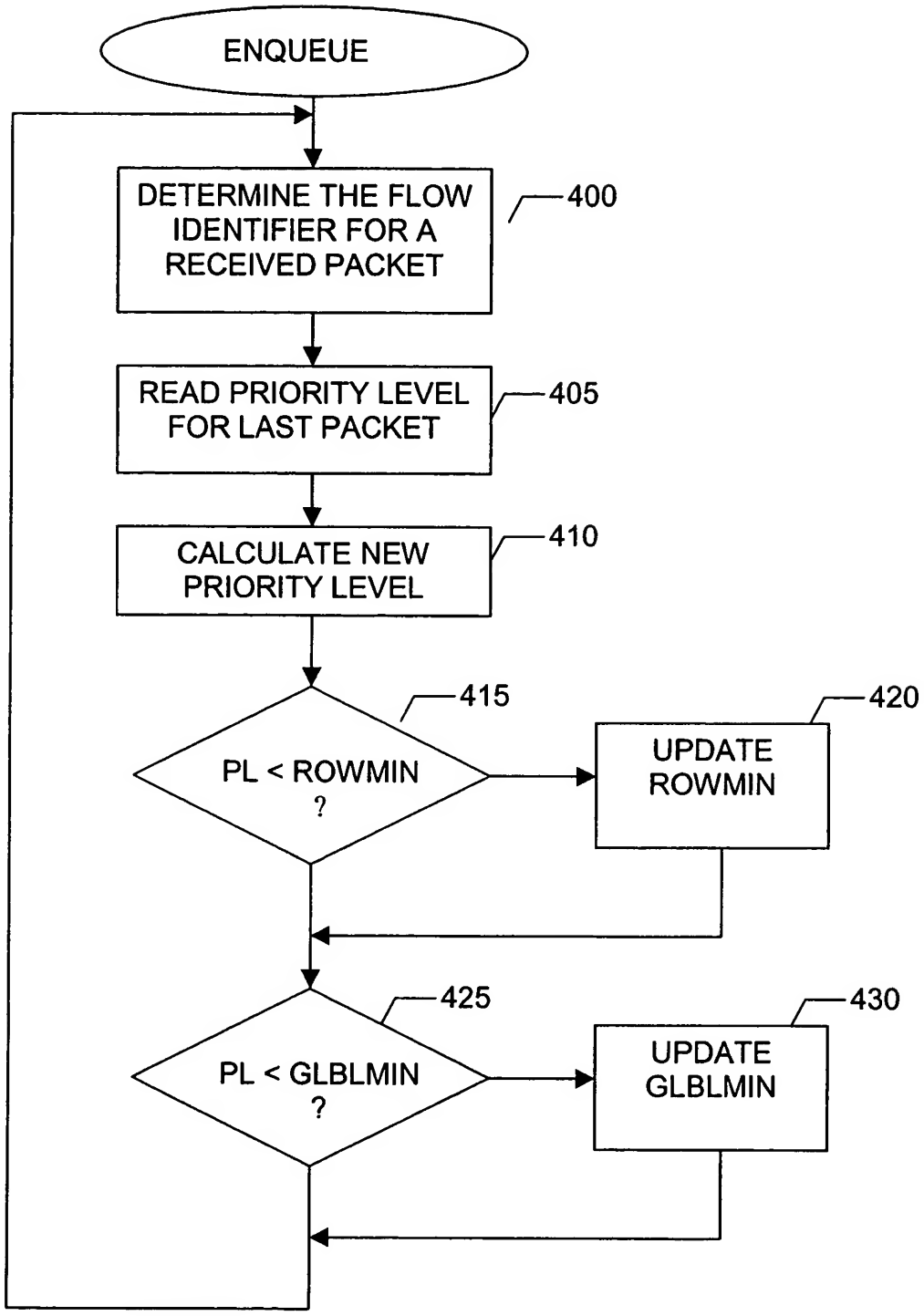
ENQUEUE
DETERMINE THE FLOW IDENTIFIER FOR A RECEIVED PACKET
400
READ PRIORITY LEVEL FOR LAST PACKET
405
CALCULATE NEW PRIORITY LEVEL
410
415
PL < ROWMIN ?
420
UPDATE ROWMIN
425
PL < GLBLMIN ?
430
UPDATE GLBLMIN

FIGURE 4

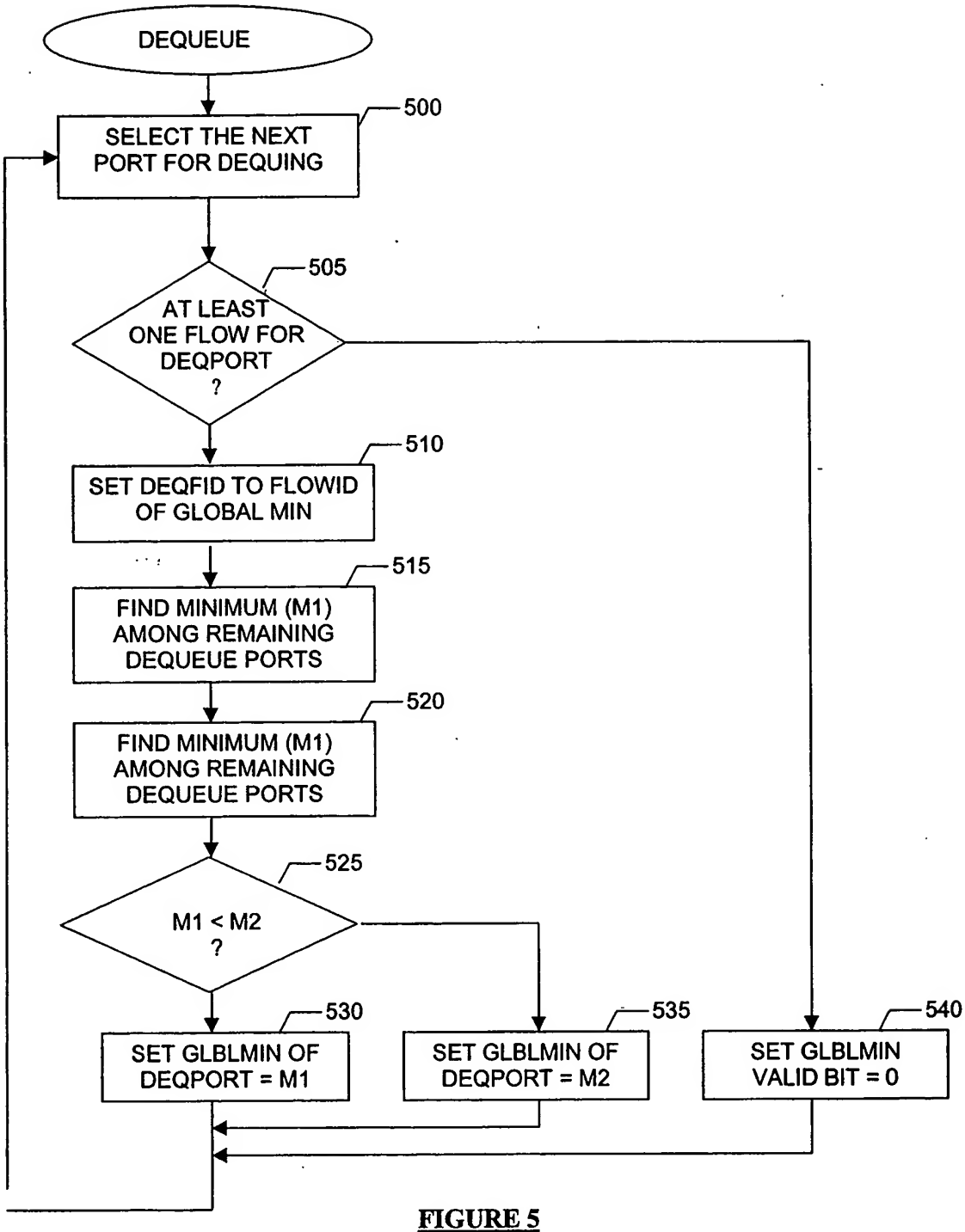
DEQUEUE
500
SELECT THE NEXT PORT FOR DEQUING
505
AT LEAST ONE FLOW FOR DEQPORT ?
510
SET DEQFID TO FLOWID OF GLOBAL MIN
515
FIND MINIMUM (M1) AMONG REMAINING DEQUEUE PORTS
520
FIND MINIMUM (M1) AMONG REMAINING DEQUEUE PORTS
525
M1 < M2 ?
530
SET GLBLMIN OF DEQPORT = M1
535
SET GLBLMIN OF DEQPORT = M2
540
SET GLBLMIN VALID BIT = 0

FIGURE 5

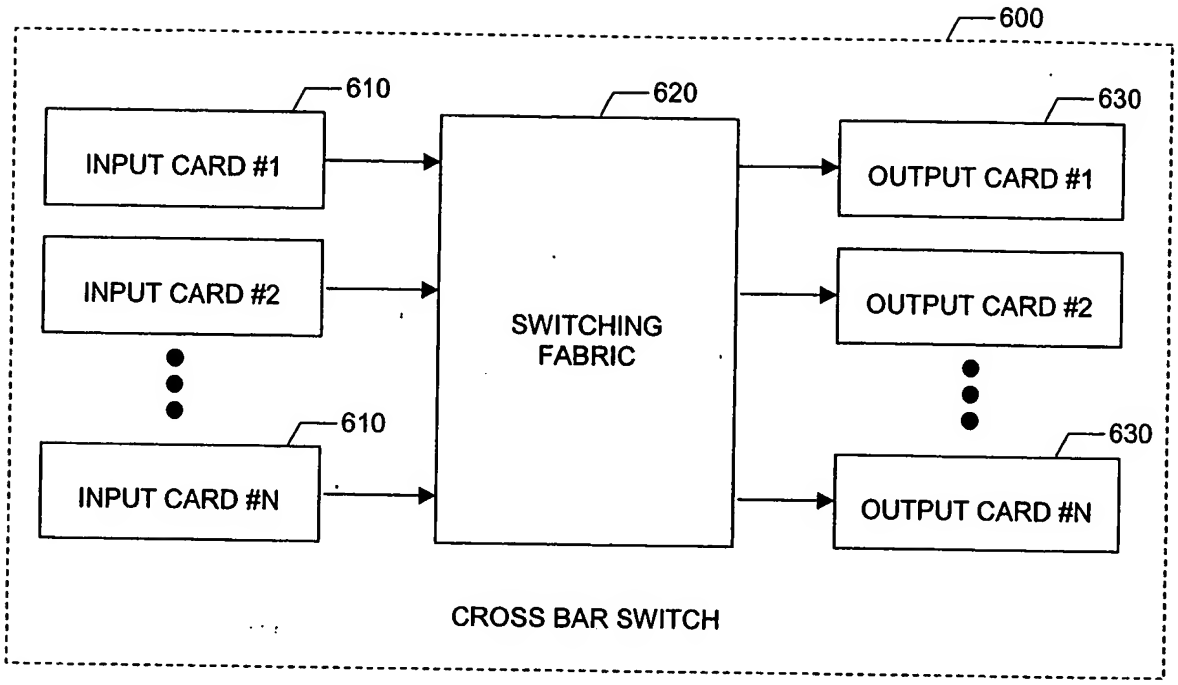
600
610
INPUT CARD #1
INPUT CARD #2
610
INPUT CARD #N
620
SWITCHING FABRIC
630
OUTPUT CARD #1
OUTPUT CARD #2
630
OUTPUT CARD #N
CROSS BAR SWITCH

FIGURE 6

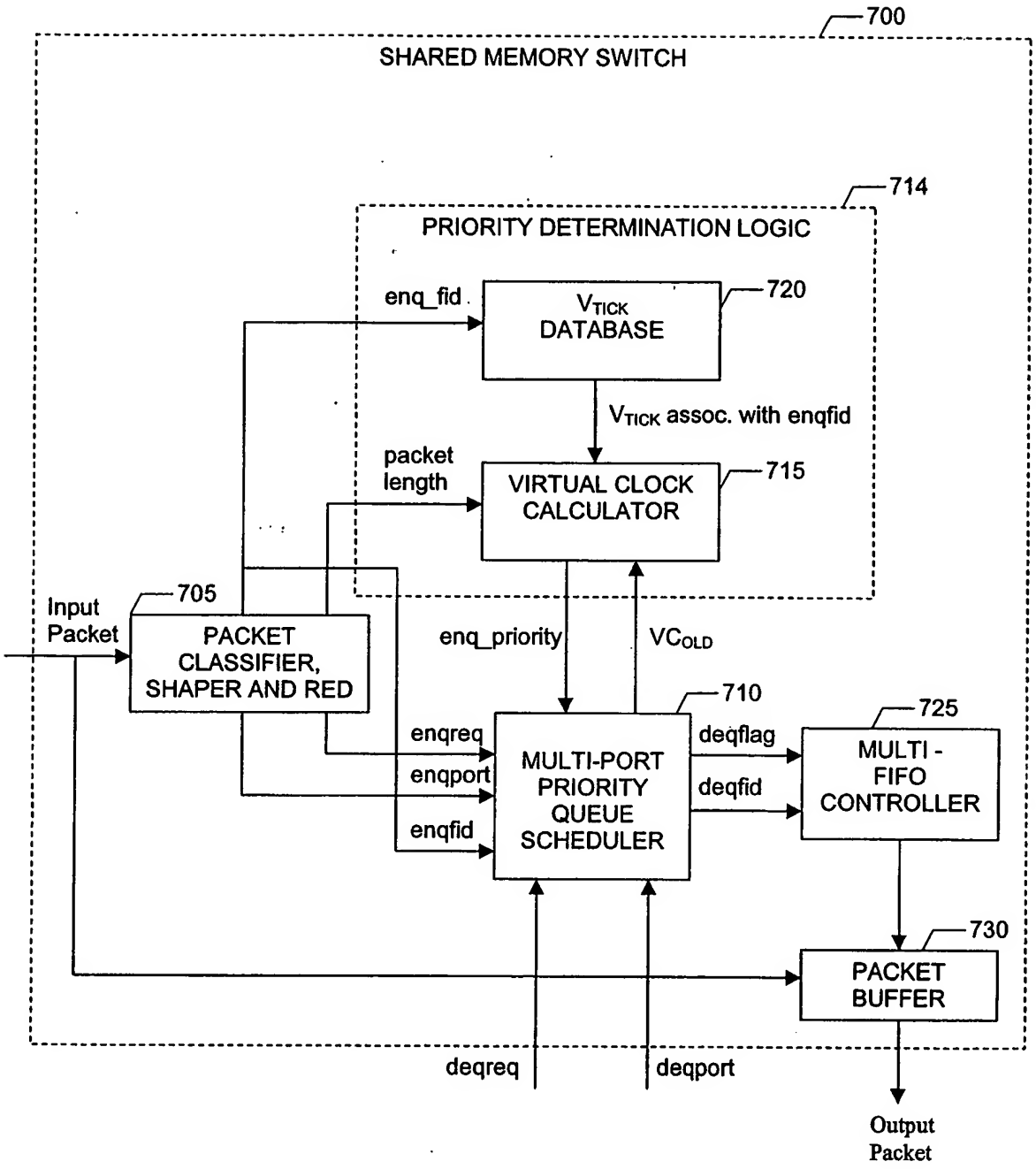
700
SHARED MEMORY SWITCH
714
PRIORITY DETERMINATION LOGIC
enq_fid
V_{TICK} DATABASE
720
V_{TICK} assoc. with enqfid
packet length
VIRTUAL CLOCK CALCULATOR
715
Input Packet
705
PACKET CLASSIFIER, SHAPER AND RED
enq_priority
VC_{OLD}
710
725
enqreq
enqport
enqfid
MULTI-PORT PRIORITY QUEUE SCHEDULER
deqflag
deqfid
MULTI - FIFO CONTROLLER
730
PACKET BUFFER
deqreq
deqport
Output Packet

FIGURE 7

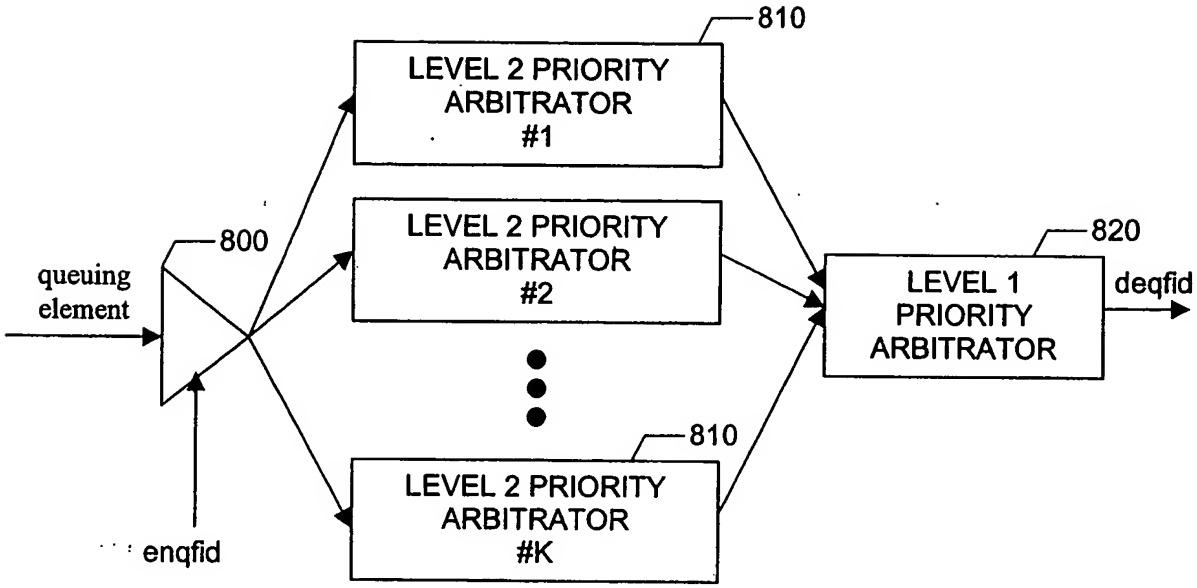
810
LEVEL 2 PRIORITY ARBITRATOR #1
LEVEL 2 PRIORITY ARBITRATOR #2
LEVEL 2 PRIORITY ARBITRATOR #K
810
800
820
queuing element
LEVEL 1 PRIORITY ARBITRATOR
deqfid
enqfid

FIGURE 8